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(54) COVER TAPE FOR PACKAGING ELECTRONIC PART

(57)Abstract:
PURPOSE: To reduce a dependency of a peel-off strength on a sealing temperature by a method wherein an outer layer is made a biaxially oriented film of a polyester or the like, an intermediate layer is made of polyethylene, a sealant is made of a mixture of polyethylene and polystyrene, and the surface of the sealant is subjected to a corona discharge treatment.
CONSTITUTION: In a cover tape for heat-sealing a plastic-made carrier tape with storage pockets continuously provided for containing electronic parts, an outer layer 2 is made of a biaxially oriented film of a polyester, polypropylene, or a nylon, and an intermediate layer 3 is made of polyethylene. A sealant 4 is a mixture containing 5-100 pts.wt. polystyrene having a melt flow rate 10-30g/10min per 100 pts.wt. of polyethylene having a melt flow rate of 10-30g/10min. The surface of the sealant is subjected to a corona discharge treatment to have a surface tension of 35-50dyne/cm. The visible light transmission of the cover tape 1 is adjusted to be not less than 75%. In this manner, ideal characteristics can be held.

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CLAIMS

[Claim(s)]
[Claim 1] It is the covering tape which can carry out the heat seal of the receipt pocket which contains electronic parts to the carrier tape made from plastics formed continuously. This covering tape It is the biaxially oriented film whose outer layer is polyester, polypropylene, or nylon. As opposed to the polyethylene 100 weight section whose middle class is polyethylene and whose melt flow rates of a sealant are 10-30g / 10 minutes It is the mixture with which a melt flow rate consists of polystyrene 5 which is 10-30g / 10 minutes - the 100 weight sections. The covering tape for an electronic-parts package which performs corona discharge treatment from which the surface tension on the front face of a sealant serves as 35 - 50 dyne/cm, changes, and is characterized by visible-ray transmission being 75% or more.
[Claim 2] It is the covering tape which can carry out the heat seal of the receipt pocket which contains electronic parts to the carrier tape made from plastics formed continuously. This covering tape It is the biaxially oriented film whose outer layer is polyester, polypropylene, or nylon. As opposed to the polyethylene 100 weight section whose middle class is polyethylene and whose melt flow rates a sealant is 10-30g / 10 minutes The polystyrene 5 whose melt flow rates are 10-30g / 10 minutes - the 100 weight sections, And it is the mixture with which a melt flow rate consists of a hydrogenation styrene-butadiene-styrene block copolymer 1 which are 30-250g / 10 minutes - the 50 weight sections. The covering tape for an electronic-parts package which performs corona discharge treatment from which the surface tension on the front face of a sealant serves as 35 - 50 dyne/cm, changes, and is characterized by visible-ray transmission being 75% or more.
[Claim 3] The covering tape for an electronic-parts package according to claim 1 or 2 5-50micro, and whose thickness of a sealant the thickness of 5-30micro, and an interlayer is 5-20micro for the thickness of an outer layer.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention protects electronic parts from contamination, on the occasion of storage of electronic parts, transportation, and wearing, since it mounts in an electronic-circuitry substrate, it is aligned, and it relates to the covering tape by which a heat seal may be carried out to the carrier tape made from plastics which formed the receipt pocket among the package objects which have the function which can be taken out.
[0002]
[Description of the Prior Art] In recent years, electronic parts for surface mounts, such as transistors including IC, diode, a capacitor, and a piezoelectric-device register, are packed and supplied to the package object which consists of a covering tape which can carry out the heat seal of the pocket which can be contained, and by which embossing shaping was carried out to the carrier tape made from plastics formed continuously, and a carrier tape according to the configuration of electronic parts. After the electronic parts of contents exfoliate the covering tape of a package object, they are taken out automatically and the surface mount is carried out to the electronic-circuitry substrate. Although the reinforcement at the time of a covering tape exfoliating from a carrier tape was called PIRUOFU reinforcement, when this reinforcement was too low, at the time of package object migration, the covering tape separated and there was a problem that the electronic parts which are contents were omitted. On the contrary, when too strong, the phenomenon which jumps out of a receipt pocket just before a carrier tape vibrates and being equipped with electronic parts, in case a covering tape is exfoliated, i.e., a jumping trouble, was caused.
[0003] The device when exfoliating from the carrier tape of current and the covering tape by which Kamiichi is carried out is classified into three, an interfacial-peeling type, an imprint exfoliation type, and a cohesive failure type. The sealing surface of a covering tape and a carrier tape exfoliates, the glue line itself is imprinted at a carrier tape at the time of exfoliation, and, for a glue line, the imprint exfoliation type of an interfacial-peeling type is [a cohesive failure type] a thing of a type which exfoliates when another different layer or the different glue line (it is henceforth called a sealant) itself is torn. When only the condition at the time of exfoliating the covering tape by which the seal of the merits-and-demerits **** was carried out to the carrier tape by each type is compared, since a sealing surface and a stripped plane are the same, an interfacial-peeling type tends to be influenced of the configuration of a carrier tape, the quality of the material, and description, and PIRUOFU reinforcement becomes unstable and is cheap [a type]. On a device, a glue line needs to be a thin film, the so-called lacquer for heat sealing must be used, PIRUOFU reinforcement tends to become sensitive to seal temperature, and an imprint exfoliation type has it in suitable PIRUOFU reinforcement. [difficult to get] Since, as for a cohesive failure type, a glue line differs from stratum disjunctum, there are few seal condition dependencies of PIRUOFU reinforcement.
[0004] Moreover, it has the big advantage in which it is not influenced of the configuration of a carrier tape, the quality of the material, and description. However, since the layer other than a glue line is involving at the time of exfoliation, layers other than a sealant may exfoliate. Moreover, it is hard to set up the location which a sealant destroys, a sealant layer remains in the front face of a carrier tape at the time of exfoliation, and it will be in the condition (it is henceforth called DERAMI) that it becomes impossible to take out contents. Since it is tear[of a sealant itself]-easy and is designed, it is the mixture of two or more resin which cannot be mixed easily in many cases, and homogeneity may not be mixed, this thing may worsen the transparency of a covering tape, or they may make the fault by the aggregate. Moreover, in the case of such an application, that in which thermal resistance is inferior among the resin in mixture may be contained. For these reasons, at the time of sealant film production, these aggregates or a degradation object appears and

there is a case where productivity is dropped, plentifully. For example, if formation of a sealant is tried using combination of the block copolymer of the polyethylene and polystyrene which are shown in claim 5 of the Japanese patent No. (applicant YUSEBE SOSHIETE ANONIMU) 1347759, elastomer-like styrene butadiene styrene, or styrene isoprene styrene and working temperature will exceed 200 degrees C, a butadiene or an isoprene component will make a lifting and an aggregate for a polymerization reaction, and a production yield will get remarkably bad.
[0005]
[Problem(s) to be Solved by the Invention] That this invention should solve the above problems The seal temperature dependence of PIRUOFU reinforcement, The result which was going to obtain the covering tape by which aging is small and seal nature was stabilized, and was studied wholeheartedly, The biaxially oriented film which is polyester, polypropylene, or nylon as an outer layer, Polyethylene is used as an outer layer and the middle class between sealants. A sealant Polyethylene, It is the mixture of a polystyrene or polyethylene, polystyrene, and hydrogenation styrene-butadiene-styrene block copolymer. Knowledge that the film which performs corona discharge treatment to a sealant front face, and grows into it is transparent and can serve as a covering tape with a good property is acquired, and it comes to complete this invention.
[0006]
[Means for Solving the Problem] This invention is the covering tape which can carry out the heat seal of the pocket which contains electronic parts to the carrier tape made from plastics formed continuously. This covering tape An outer layer is a biaxially oriented film which is polyester, polypropylene, or nylon, and an outer layer and the middle class between sealants are polyethylene. A sealant It is the mixture of a polyethylene, polystyrene or polyethylene, polystyrene, and hydrogenation styrene-butadiene-styrene block copolymer, and is the covering tape for an electronic-parts package characterized by performing corona discharge treatment to a sealant front face, and growing into it. The thickness of the biaxially oriented film whose desirable mode of this invention is an outer layer is 5-30micro. As opposed to the polyethylene 100 weight section whose melt flow rates the thickness of the middle class's polyethylene film is 5-50micro, the thickness of a sealant is 5-20micro, and a sealant is 10-30g / 10 minutes or [that it is the mixture with which a melt flow rate consists of polystyrene 5 which is 10-30g / 10 minutes - the 100 weight sections] -- or As opposed to the polyethylene 100 weight section whose melt flow rates are 10-30g / 10 minutes The polystyrene 5 whose melt flow rates are 10-30g / 10 minutes - the 100 weight sections, And it is the mixture with which a melt flow rate consists of a hydrogenation styrene-butadiene-styrene block copolymer 1 which are 30-250g / 10 minutes - the 50 weight sections. Perform corona discharge treatment from which the surface tension on the front face of a sealant serves as 35 - 50 dyne/cm, and it changes. The adhesive strength of the sealant of this covering tape and the sealing surface of this carrier tape is 10-120gr per seal width of face of 1mm, and the visible-ray transmission of this covering tape is the covering tape for an electronic-parts package characterized by being 80% or more preferably 75% or more.
[0007]
[Function] When drawing 1 explains the component of the covering tape 1 of this invention, an outer layer 2 is the biaxially oriented film which is polyester, polypropylene, or nylon, and it is a rigid high film in the transparence whose thickness is 5-30micro. The thickness of rigidity is lost by 5micro or less, and a covering tape becomes easy to go out. If 30micro is exceeded, it will be too hard and a seal will become unstable. A consistency consists of the low density polyethylene of 0.91 - 0.92 g/cm2, it is transparent and the middle class 4 is a supple film whose thickness is 5-50micro. When thickness carries out a seal to a carrier tape in 5micro or less, since there is little resiliency of a covering tape, it is influenced of the configuration of a carrier tape, and PIRUOFU reinforcement becomes unstable. Moreover, after film production, it is easy to be cooled and adhesion with a sealant worsens. If 50micro is exceeded, heat will propagation-come to be hard to a sealant, and required PIRUOFU reinforcement will no longer be obtained. In addition, both may be laminated through the glue line of heat-curing molds, such as an isocyanate system and an imine system, in order to raise the lamination reinforcement of an outer layer and an interlayer.
[0008] As opposed to the polyethylene 100 weight section whose melt flow rates of a sealant 5 are 10-30g / 10 minutes or [that it is the mixture whose polystyrene whose melt flow rates are 10-30g / 10 minutes is the 5 - 100 weight section] -- or As opposed to the polyethylene 100 weight section whose melt flow rates are 10-30g / 10 minutes The polystyrene whose melt flow rates are 10-30g / 10 minutes The 5 - 100 weight section, It is the mixture whose hydrogenation styrene-butadiene-styrene block copolymer whose melt flow rates are 30-250g / 10 minutes is 1 - 50 weight section. It is the film of the transparency which performs corona discharge treatment from which the surface tension on the front face of a sealant serves as 35 - 50 dyne/cm, and changes. About the formation approach of the above multilayer film, the extrusion laminating

method is cheap, and it sees from a health side and is the most desirable. If the melt flow rate of polyethylene uses the extrusion laminating method as a processing method when the melt flow rate of 10g / 10 minutes or less, or polystyrene is [the melt flow rates of a 10g / 10 minutes or less, or hydrogenation styrene-butadiene-styrene block copolymer (SEBS)] 30g / 10 minutes or less, film production with it cannot be performed. [the small spread nature of a film and] [suitable] Moreover, when the melt flow rate of 30g / 10 minutes or more, or polystyrene is [the melt flow rates of a 30g / 10 minutes or more, or hydrogenation styrene-butadiene-styrene block copolymer] 250g / 10 minutes or more for the melt flow rate of polyethylene, film production with necking appropriate intense too cannot be performed. The cohesive failure of a sealant does not break out that the content of polystyrene is below 5 weight sections to the polyethylene 100 weight section. Mixture worsens that they are more than the 100 weight sections, and it becomes impossible to produce a film. The visible-ray permeability of a film becomes 80% or less for the content of a hydrogenation styrene-butadiene-styrene block copolymer (SEBS) to be below 1 weight section to the polyethylene 100 weight section. The thickness variation of a film arises in the case of the extrusion lamination by their being more than 50 weight sections. If thickness of a sealant is set to 5micro or less by the extrusion laminating method, the variation in thickness will be large and suitable PIRUOFU reinforcement will no longer be obtained at the time of a seal. In 20micro or more, DERAMI becomes easy to occur at the time of Peel. Adhesive strength with a carrier tape becomes that the surface tension on the front face of a sealant is 35 or less dyne/cm with 20g or less, and it is not suitable practically. Blocking arises that it is 50 dynes/cm or more at the time of covering tape storage, and ****** becomes impossible.
[0009] In order to prepare an electrostatic effect, an antistatic treatment layer or a conductive layer may be prepared in an outer layer side, i.e., the front rear face of biaxial-stretching polyester film. In this case, the resin of a sealant is formed so that the adhesive strength of this covering tape 1 and this carrier tape 6 may become ten to 70 gr still more preferably ten to 120 gr per seal width of face of 1mm. When PIRUOFU reinforcement is lower than 10gr(s), at the time of package object migration, a covering tape separates and there is a problem that the electronic parts which are contents are omitted. On the contrary, if higher than 120gr, in case a covering tape is exfoliated, a carrier tape will vibrate, and the phenomenon which jumps out of a receipt pocket just before electronic-parts wearing is carried out, i.e., a jumping trouble, will be caused. According to this invention, the dependency of seal conditions is low, and aging of the PIRUOFU reinforcement by storage environment can obtain the engine performance made into few purposes. Moreover, since it is constituted so that the visible-ray permeability of a covering tape may become 80% or more preferably 75% or more, the electronic parts of the interior enclosed with the carrier tape can check with viewing or a machine. When lower than 10%, the check of inner electronic parts is difficult.
[0010]
[Example] Although the example of this invention is shown below, this invention is not limited at all by these examples.
The <<example 1 - 6>> Example of <<comparison 1-6>>
The covering tape of the lamination which showed the sealant of a combination formula shown in Table 1 and 2 by extrusion lamination at the biaxial-stretching polyester film and polyethylene [of 15micro of thickness / of the lamination article of polyethylene] side of 25micro of thickness to drawing 1 which produced the film to 10micro of thickness was obtained. The obtained covering tape was heat sealed after the slit to 5.3mm width of face with the carrier tape made from PET of 8mm width of face, PIRUOFU reinforcement and an exfoliation device were measured on condition that the following, and visible-ray permeability was measured further. The characterization result was shown in Table 1 and 2.
* Heat-sealing conditions : 160degree C/1kg/cm2/0.1sec., seal width of face 0.4mmx2 Peel conditions : 180-degree Peel, Peel speed 300 mm/min.n=3 Exfoliation device : Condensation; exfoliation by cohesive failure, exfoliation by the interface; interface [0011]
Table 1 Fruit ** Example 1 2 3 4 5 6 Sealant Combination (weight section)
Polyethylene 100 100 100 100 100 100 Polystyrene 10 30 90 30 30 30 SEBS 0 0 0 7 45 7 Surface tension (dyne/cm) 40 40 40 40 40 45 Property of a covering tape Visible-ray permeability (%) 82 80 78 87 90 87 PIRUOFU reinforcement 48 51 62 45 30 54 (initial value width of g/1mm)
Exfoliation device Condensation Condensation Condensation Condensation Condensation Condensation
[0012]
Table 2 Ratio ** Example 1 2 3 4 5 6 Sealant Combination (weight section)
Polyethylene 100 100 100 100 100 100 Polystyrene 4 110 30 30 4 110 SEBS 0 0 70 7 7 7 Surface tension (dyne/cm) 40 40 40 30 40 30 Property of a covering tape Visible-ray permeability (%) 84 68 91 87 84 72 PIRUOFU reinforcement 10 72 12 08 67 (initial value width of g/1mm)

Exfoliation device Interface Condensation Interface - Interface Condensation [0013]
[Effect of the Invention] The problem that the covering tape of this invention has a large dependency over the seal conditions of the PIRUOFU reinforcement which is the point and the conventional trouble that PIRUOFU reinforcement with a carrier tape can be set as arbitration in the range of 10-120gr per mm, the problem which changes with storage environment with time, a DERAMI problem, an aggregate problem, and a transparency problem can be solved, and the stable PIRUOFU reinforcement can be obtained.

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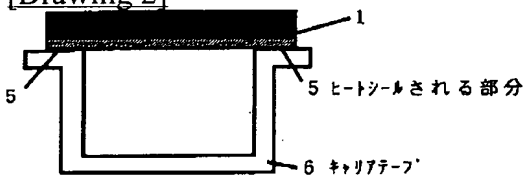
DRAWINGS

[Drawing 1]

[Drawing 2]



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